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ARMING TERRACED LAND

U.S. DEPARTMENT OF AGRICULTURE • LEAFLET NO. 335

FARMING TERRACED LAND

Soil Conservation Service

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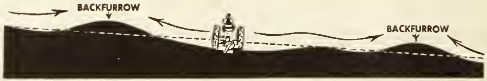
Building terraces can help to control erosion—but it is only the beginning. How well terraces do their job of protecting cultivated land depends on how they are farmed.

Many terraces have been built on farms in the United States. Many more are needed. Some of the first terraces were built with ridges and channels that were too narrow for efficient farming operations; terraces built with broad ridges and channels are much easier and more economical to farm. Terraces can be built parallel or nonparallel to each other, but parallel terraces are easier to farm, particularly if the crops are in rows.

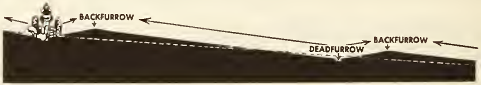
In farming terraces, you can use either a one-way or two-way plow. A one-way plow used for several years eventually benches or creates steps from terrace to terrace. You continually leave deadfurrows in the area between terraces and place backfurrows on the terrace ridge. Because the soil removed between terraces cannot be replaced, the profile between terraces becomes hollowed out and the terraces become benched. On some soils and slopes this may be desirable.

If you use a two-way plow, the deadfurrow is in the terrace channel, where it can be smoothed down. Thus you maintain a constant profile or slope between terraces, and benching does not occur. If you farm terraces and need a new plow, consider getting a two-way plow.

As farms increase in size and as farm machinery becomes larger and more specialized, construction machinery such as a motor grader is recommended for maintaining terraces. The trend in many areas is for farmers to hire equipment rather than to do it themselves.



TOP: One-way plow method. BOTTOM: Two-way plow method. Arrows show the direction in which dirt is thrown; the dotted line shows the natural ground level.



How to Use a Two-Way Plow

Nonparallel Terraces

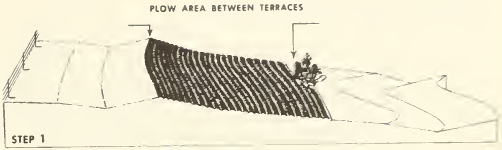
STEP 1. Throw the first furrow up on the ridge of the top terrace from the backslope side. Then plow the area below the top terrace by turning all the furrows uphill.

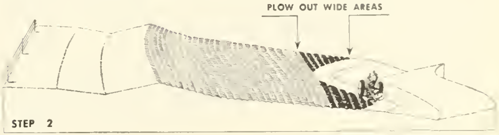
STEP 2. When you are within 15 to 20 feet of the channel of the next terrace at the narrowest place, plow the wide areas. Leave an area of unplowed land of even width through the field.

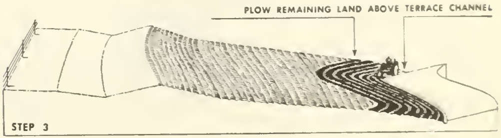
STEP 3. Plow the remaining land (after all the wide areas are plowed, a land 15 to 20 feet wide will be left above the terrace channel) by turning the furrows uphill.

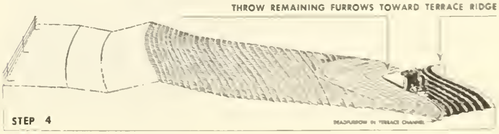
STEP 4. Plow the area between the top of the ridge and the low point of the channel. Throw the first furrow toward the top of the ridge. Continue throwing furrows in the same direction until this land is plowed.

This method leaves one deadfurrow in the bottom of the terrace channel and one backfurrow on the ridge. After plowing the area between the first and second terraces, plow the area above the first terrace and the area between other terraces, using the same sequence. After several plowings, the ridge may become too high. You can prevent this and, at the same time, broaden the terrace by leaving the backfurrow to one side or the other of the extreme peak.






PLOW REMAINING LAND ABOVE TERRACE CHANNEL
STEP 3


THROW REMAINING FURROWS TOWARD TERRACE RIDGE
STEP 4
DEADFURROW IN TERRACE CHANNEL

Parallel Terraces

Plow the front slope of each terrace toward the ridge. Plow uphill the remaining area from the channel to the ridge of the next terrace above. Plowing uphill tends to keep up with any downslope movement of soil between terraces. On deep soils plowing can be done downslope to reduce the slope between terraces. Plowing downslope tends to bench the area between terraces uniformly and requires periodic raising of the terrace ridge.

How to Use a One-Way Plow

Nonparallel Terraces

Method 1. Deadfurrow Between Terraces

STEP 1. Backfurrow to each terrace ridge. It does not matter which terrace you start with. If the terrace has lost some height, throw the furrows together at the top just as you would start on a land anywhere. If the terrace ridge is high enough, keep the plow below the ridge so that the disturbed soil from the first round meets at the top. This procedure helps to broaden the top of the terrace and makes it easier to farm. Continue plowing until you have plowed an area about 40 feet wide, 20 feet above and 20 feet below the terrace ridge. Do this on each terrace; then plow the remaining areas between the terraces as separate lands.

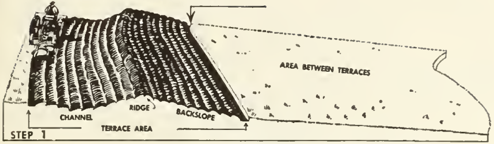
STEP 2. Continue to plow these lands until the unplowed strip narrows down to about 20 feet wide at the narrowest part. This area will be irregular in width.

STEP 3. Plow extra furrows on the wide parts of the remaining area, until you have a turnland 20 feet wide extending the entire length of the field. In this way you plow the irregular areas without turning on plowed ground.

STEP 4. Plow this uniform-width turnland as a regular land and leave the deadfurrow about halfway between terraces. The turnland can be narrower than 20 feet if you are using small equipment; it should be wider if you are using a tractor and large plow.

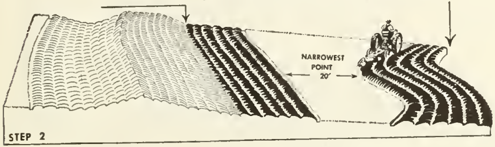
This farmer is backfurrowing to the terrace ridge with his one-way plow (OKLA–11,851).

BACKFURROW ON CENTER OF RIDGE
PLOW OUT TO EDGE OF TERRACE AREA



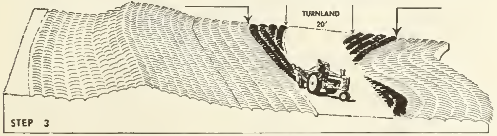
STEP 1

PLOW AROUND AREA BETWEEN TERRACES UNTIL
UNPLOWED SECTION IS 20' AT NARROWEST POINT



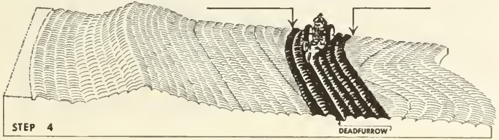
STEP 2

FOLLOW EXISTING FURROWS AND TRIM
TURNLAND DOWN TO UNIFORM WIDTH



STEP 3

PLOW AROUND TURNLAND AND
LEAVE DEADFURROW IN CENTER



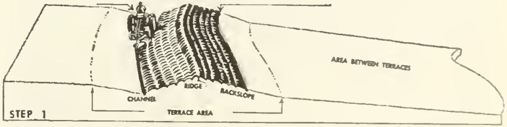
STEP 4

After studying the diagrams you may find that you are already using this system. If, however, you have been turning on plowed land rather than using the turnland, try this easier method. You always throw the furrow into the terrace channel and leave the deadfurrow in the same place each time you plow. Because it is not desirable to leave the deadfurrow in the same place each time you plow, alternate this method of plowing with the following method.

Method 2. Deadfurrow in Terrace Channel

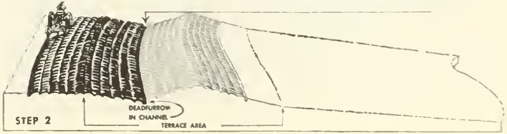
STEP 1. Throw the furrow away from, rather than into, the terrace channel every other time you plow by backfurrowing from the terrace ridge to the center of the terrace channel on each terrace.

BACKFURROW FROM TERRACE RIDGE
OUT TO CENTER OF TERRACE CHANNEL



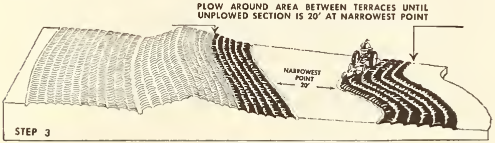
STEP 1

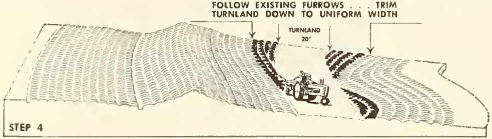
START BACKFURROWING ABOVE TERRACE 15' TO 20' FROM THE
CHANNEL DEADFURROW, CONTINUE UNTIL THE CHANNEL IS REACHED

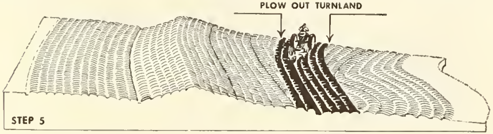


STEP 2

STEP 2. Move up the slope 15 to 20 feet from the terrace channel and start another backfurrow parallel to the terrace channel. The first time you may want to set a line of stakes. After a little experience, you can follow the line with your eye. Continue to backfurrow this land until you reach the deadfurrow in the terrace channel. The deadfurrow formed there materially increases the capacity of the terrace.


PLOW AROUND AREA BETWEEN TERRACES UNTIL UNPLOWED SECTION IS 20' AT NARROWEST POINT
NARROWEST POINT 20'
STEP 3


FOLLOW EXISTING FURROWS . . . TRIM TURNLAND DOWN TO UNIFORM WIDTH
TURNLAND 20'
STEP 4



STEPS 3, 4, and 5. Work the remaining land below each terrace down to an even-width strip and plow it as outlined in method 1. Do the same on all the terraces.

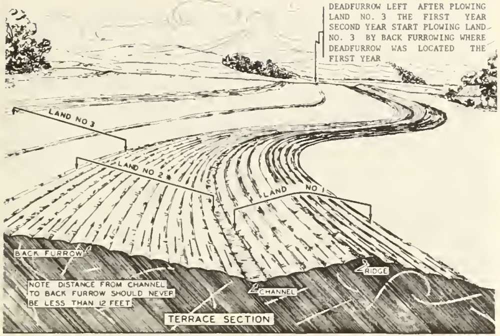
It is important to see that the deadfurrow falls in a different place each time the field is plowed. The easiest and best way to do this is to alternate methods 1 and 2 and to vary the width of the plowed strip between the terraces. Method 2 throws the furrows out of the terrace channel.

Always plow point or irregular areas before plowing the long ones. This gives solid or undisturbed ground to turn on and results in less wear and tear on equipment.

Parallel Terraces

Broad-Based. Plow so that deadfurrows do not fall in the same place too often. Either raise the terrace ridge by backfurrowing each time the field is plowed or deepen the channel by deadfurrowing. If the terrace height or capacity is low, place both a deadfurrow in the channel and a backfurrow on the ridge. It can be done by the three-land method—dividing the area between terraces into three lands and plowing each land separately in progressive steps. Vary the width of land No. 2 (see drawing) with each plowing.

Grassed Backslope. Plowing terraces with grassed backslopes is considerably different. Plowing is easier because the land can be plowed more like level land, with the deadfurrow in the center one year and the backfurrow in the center the next year. Such plowing does not maintain terrace height, but

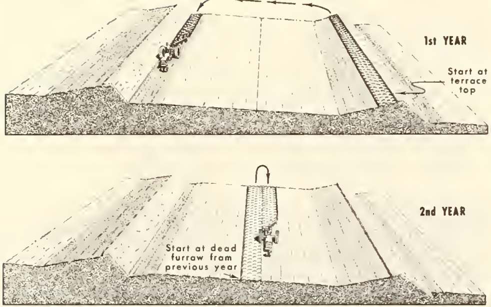

DEADFURROW LEFT AFTER PLOWING LAND NO. 3 THE FIRST YEAR SECOND YEAR START PLOWING LAND NO. 3 BY BACK FURROWING WHERE DEADFURROW WAS LOCATED THE FIRST YEAR
LAND NO 3
LAND NO 2
LAND NO 1
BACK FURROW
RIDGE
NOTE DISTANCE FROM CHANNEL TO BACK FURROW SHOULD NEVER BE LESS THAN 12 FEET
CHANNEL
TERRACE SECTION

Three-land method of plowing broad-based terraces. Arrows show direction in which furrows are made.

does retain the general cross section of the terrace interval. Occasionally the terrace ridge must be raised by extra plowing or by construction equipment.

The grassed backslope is a critical area. Establish and keep a good sod; fertilize the slope as needed. Control tree and brush growth by spraying or mowing if possible and eliminate gophers and burrowing rodents from the slope.

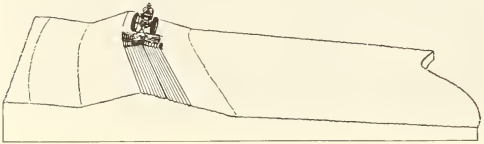
Cultivating parallel to terraces with grassed backslopes on steeply sloping land. These grassed backslope terraces were the first ones built in southwestern Iowa (IA–2,824).



Method of plowing terraces with grassed backslopes.

How to Use Other Tillage Implements

When working terraced land for either row crops or grain, operate all cutting tools such as disks, field cultivators, or spring-tooth harrows on the contour, using the terraces as guidelines.



Cultivating soybeans on a field of parallel terraces with four-row equipment (ILL–2,161).

Planting Row Crops

Nonparallel Terraces

Method 1

STEP 1. Start on the uphill side of the top terrace. Do not straddle the terrace with the planter. Uniform depth of seeding cannot be achieved if planters straddle terraces. Put the first row just off the terrace ridge on the uphill side. Continue planting to the top of the slope.

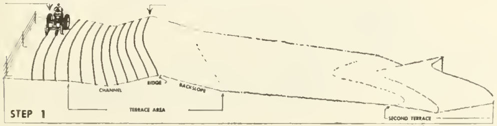
STEP 2. After planting above the top terrace to the edge of the field, start planting on the backslope of the top terrace and plant down the slope about one-third the distance between the first and second terraces.

STEP 3. Plant up the channel side of the ridge of the second terrace, as with the first one, until a strip eight rows wide at the narrowest part is left unplanted. This area will be irregular in width.

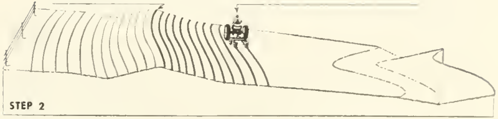
STEP 4. Plant short rows on the wide part of this unplanted area until you have an eight-row width of turnland extending the length of the field. You can then plant the irregular areas without turning on planted ground.

STEP 5. Plant the turnland last in eight rows that go the length of the field. Two-row, four-row, or eight-row planters can be used. If you use another kind of planter, you must change the width of the turnland.

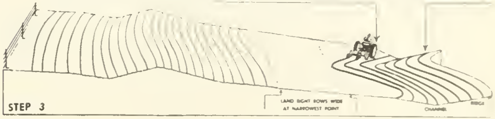
Many prefer this method because a better contour is maintained. In the fall you can harvest the eight turnland rows first and then disk them down, which leaves a turning area for harvesting the point rows.


START PLANTING NEAR TOP OF RIDGE
CONTINUE TO TOP OF SLOPE OR BOUNDARY

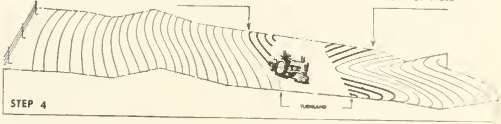
STEP 1


CONTINUE PLANTING BY STARTING ON BACKSLOPE OF TOP TERRACE AND PLANT DOWN ABOUT ONE-THIRD OF DISTANCE BETWEEN FIRST AND SECOND TERRACES

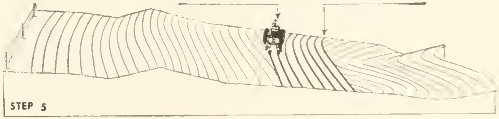
STEP 2


START PLANTING NEAR THE TOP OF RIDGE OF SECOND TERRACE AND PLANT UP THE SLOPE OVER THE CHANNEL, UNTIL A LAND EIGHT ROWS WIDE AT NARROWEST POINT IS LEFT UNPLANTED

STEP 3


PLANT SHORT ROWS ON WIDE PART OF THE TURNLAND UNTIL EIGHT-ROW TURNLAND EXTENDS LENGTH OF FIELD

STEP 4


PLANT EIGHT-ROW TURNLAND LAST
EXTEND THROUGH ENTIRE FIELD LENGTH

STEP 5

Method 2

STEP 1. Start planting on the inside of the top terrace and continue to the top of the slope or field boundary.

STEP 2. Plant on the channel side of the ridge of the second terrace. Plant uphill until a land eight rows wide at the narrowest part is left unplanted on the backslope of the terrace above. This area will be irregular.

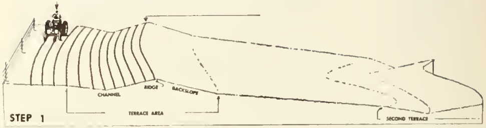
STEP 3. Plant short rows on the wide parts of the unplanted area until the eight-row-wide turnland extends the length of the field. As in method 1, you can plant the irregular areas without turning on planted ground.

STEP 4. Plant the eight-row turnland by starting near the top of the backslope of the top terrace and planting down.

The only difference between this method and method 1 is in the location of the turnland. In method 2 the eight-row turnland is left just below each terrace instead of halfway between terraces. Many farmers prefer this method because it (1) is easier to explain to hired men and (2) is easier, with the eight-row turnland area on the backslope of the terrace, to be sure at harvesting time of starting on rows that extend the length of the field.

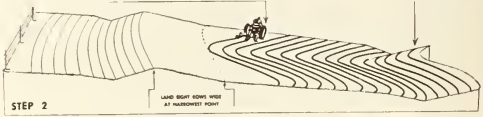
In both methods, you can establish the eight-row turnland by eye after you have had a little experience. Here, as in plowing, you may wish to set two lines of stakes the first time you try it—one line on the upper side and one on the lower side of the turnland.

START PLANTING NEAR TOP OF RIDGE
CONTINUE TO TOP OF SLOPE OR BOUNDARY



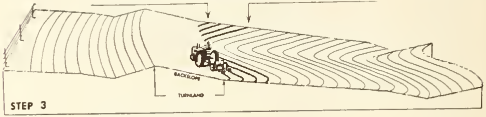
STEP 1

START PLANTING NEAR THE TOP OF RIDGE OF SECOND TERRACE AND PLANT UP THE SLOPE
OVER CHANNEL, UNTIL A LAND EIGHT ROWS WIDE AT NARROWEST POINT IS LEFT UNPLANTED



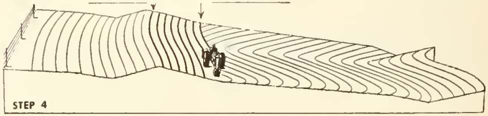
STEP 2

PLANT SHORT ROWS ON WIDE PART OF TURNLAND
UNTIL EIGHT-ROW TURNLAND EXTENDS LENGTH OF FIELD



STEP 3

START NEAR TOP OF BACKSLOPE OF TOP
TERRACE AND PLANT DOWN EIGHT ROWS

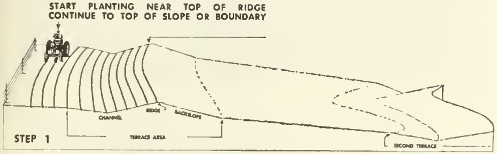


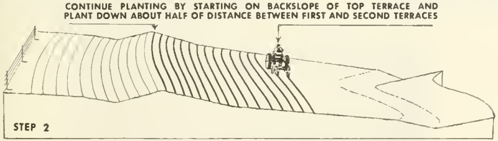
STEP 4

Method 3

STEP 1. Plant on the inside slope of the top terrace to the top of the slope or field boundary as in the other methods.

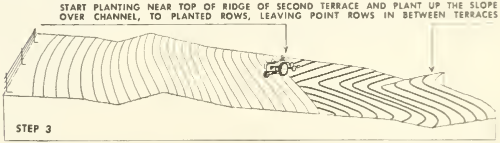
STEP 2. Plant down on the backslope of the top terrace to a point about half the distance between the first and second terraces.


START PLANTING NEAR TOP OF RIDGE
CONTINUE TO TOP OF SLOPE OR BOUNDARY
CHANNEL
RIDGE
BACKSLOPE
TERRACE AREA
SECOND TERRACE
STEP 1


CONTINUE PLANTING BY STARTING ON BACKSLOPE OF TOP TERRACE AND PLANT DOWN ABOUT HALF OF DISTANCE BETWEEN FIRST AND SECOND TERRACES
STEP 2

STEP 3. Plant near the top of the inside slope of the second terrace, planting uphill until you reach the rows already planted. The point rows remaining near the center between terraces can be planted either from one or both sides of the uneven area. Planting will end in the center of the area. Continue this procedure with the remaining terraces. Use the last terrace as a guideline to plant to the bottom of the field.

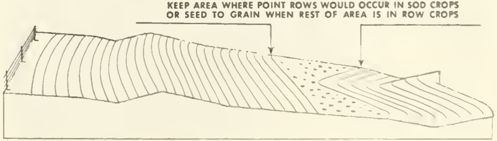
This method may be preferred by those who harvest corn with a pull-type picker. It is not recommended for listing because of turning on planted ground.


START PLANTING NEAR TOP OF RIDGE OF SECOND TERRACE AND PLANT UP THE SLOPE OVER CHANNEL, TO PLANTED ROWS, LEAVING POINT ROWS IN BETWEEN TERRACES
STEP 3

Method 4

This method is similar to method 3 except that you leave the uneven area near the center between terraces in sod crops. A temporary crop that can be harvested for hay can be planted in the uneven area.

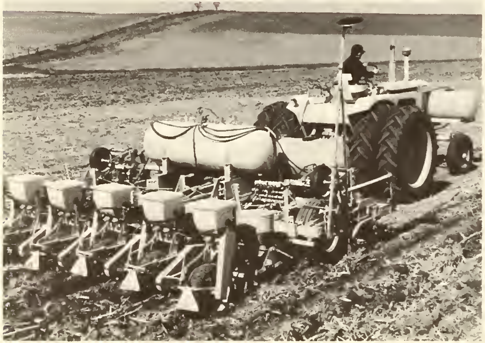
Avoid any method that puts point rows in the terrace channel.

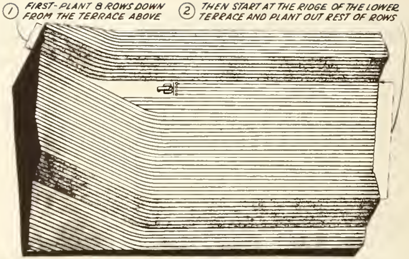

KEEP AREA WHERE POINT ROWS WOULD OCCUR IN SOD CROPS OR SEED TO GRAIN WHEN REST OF AREA IS IN ROW CROPS

Parallel Terraces

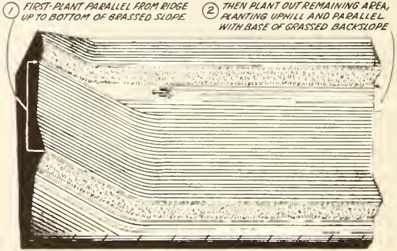
Parallel terraces are easy to plant. If the terraces are not the same length (where one terrace stops and another continues), you must plant parallel to the longer line to keep rows parallel. Planting from the longer to the shorter terrace prevents point rows.

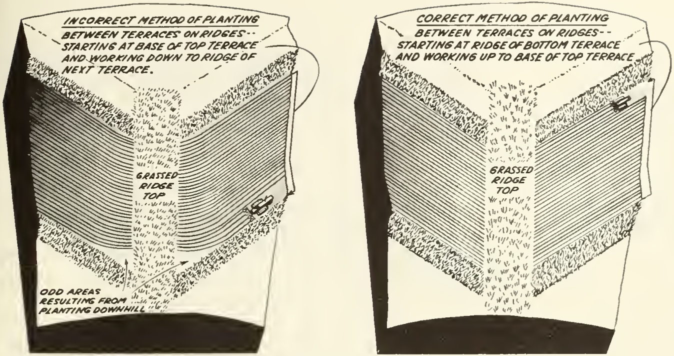
A six-row corn planter working parallel to the terraces (IA–2,810).



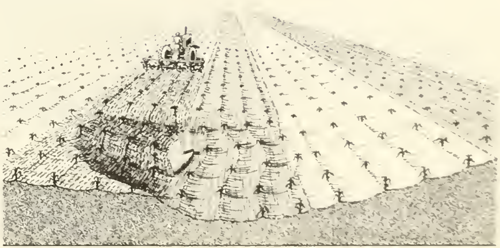

① FIRST- PLANT 8 ROWS DOWN FROM THE TERRACE ABOVE
② THEN START AT THE RIDGE OF THE LOWER TERRACE AND PLANT OUT REST OF ROWS

How to plant correction areas. TOP: Between broad-based terraces; BOTTOM: Between terraces with grassed backslopes.


① FIRST- PLANT PARALLEL FROM RIDGE UP TO BOTTOM OF GRASSED SLOPE
② THEN PLANT OUT REMAINING AREA, PLANTING UPHILL AND PARALLEL WITH BASE OF GRASSED BACKSLOPE


INCORRECT METHOD OF PLANTING
BETWEEN TERRACES ON RIDGES--
STARTING AT BASE OF TOP TERRACE
AND WORKING DOWN TO RIDGE OF
NEXT TERRACE.
GRASSED
RIDGE
TOP
ODD AREAS
RESULTING FROM
PLANTING DOWNHILL
CORRECT METHOD OF PLANTING
BETWEEN TERRACES ON RIDGES--
STARTING AT RIDGE OF BOTTOM TERRACE
AND WORKING UP TO BASE OF TOP TERRACE
GRASSED
RIDGE
TOP

Planting a grassed turn strip. Same technique for both grassed backslope and broad-based sections.



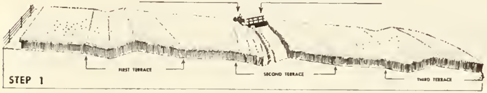
Maintaining an area of sod to protect a pipe inlet from machinery.

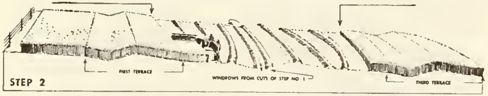
Harvesting

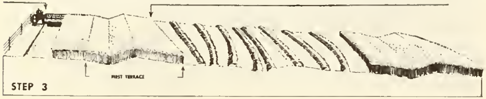
Close-Sown Crops

Grain, flax, and other close-sown crops can be harvested with a windrower or cut direct with a combine. All harvesting operations present the same general problems.

On land that slopes 6 percent or less, the terraces can be built wide and crossed with machinery at almost any angle. To harvest on such terraces, cut around the field, as you would if the terraces were not there. On steeper slopes, harvest the grain with the terraces.


OPEN LAND ON TOP OF SECOND TERRACE


CUT LAND UNTIL NEAR FIRST AND THIRD TERRACES


CUT AROUND THE AREA LEFT ABOVE, AND INCLUDING, THE FIRST TERRACE

Row Crops

The method of harvesting depends largely on how you plant the field. Only one method is shown in detail—picking corn planted according to method 1 (page 8). The others are similar, and all are the reverse of the planting process.

STEP 1. Open up a land by picking the rows in the eight-row turnland.

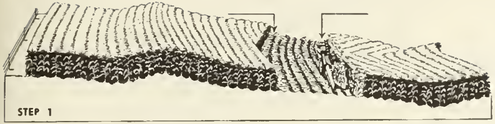
STEP 2. Pick the short or point rows next. You can pick them easily by using the eight-row turnland as a place to turn your equipment.

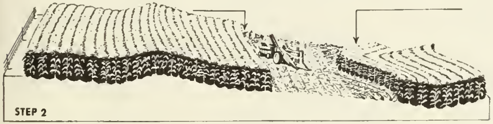
STEP 3. Harvest all the long rows between the turnland and the second terrace. As in step 2, the eight-row turnland furnishes a turnland for harvesting these rows.

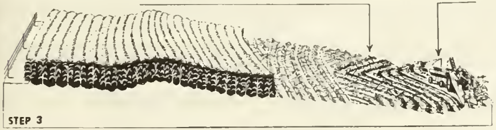
STEP 4. Harvest the rows up to and above the top terrace. Usually it is better to open a land in this area by picking around the area containing the long rows. After you harvest the long rows, harvest any short rows left along the field boundary as a land by working around the rest of the corn. Harvesting the long rows first gives you a turning area for picking the short rows. Harvest the rest of the terraces as in steps 1, 2, and 3. Harvest the area below the last terrace by lands as though it were an ordinary field. Pick the long rows first so that you will have turnlands for harvesting the short rows.

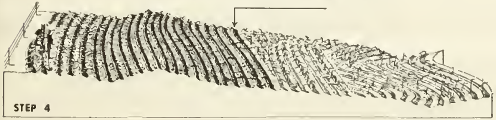
Some suggestions for harvesting corn in terraced fields are:

1. Adapt picking to the various planting methods, study


PICK OUT TURNLAND FIRST


PICK SHORT ROWS ON WIDE PART OF TURNLAND


PICK CORN BETWEEN TURNLAND AND SECOND TERRACE RIDGE


PICK ALL CORN ABOVE TURNLAND TO FIELD BOUNDARY

the charts for planting, and use the reverse order.

2. Harvest the long rows first for all methods of planting. This leaves a good-sized area of picked corn to turn on in harvesting the short rows.

3. Follow the same steps for harvesting corn for silage as for picking corn.

Hay

Techniques for cutting hay are similar to those for other close-sown crops. On land sloping less than 6 percent, cut the hay as though the field were not terraced. On steeper land, it is better to open up lands on the terraces and work each terrace as an individual unit.

Using a side-delivery rake presents the most difficult problem. Start by working the hay down from the top of the terrace ridge, leaving one windrow in the bottom of the terrace channel and one on the back side of the ridge. Both are easily picked up with a hay loader. If you make and pick the short windrows when on the last long windrow, you can avoid much excess driving in the field. See photo (SD–714) of farmer windrowing oats on back cover.

This leaflet, first issued in 1952, was written by Paul Jacobson and Walter Weiss, zone conservationists, and revised by R. C. Barnes, Jr., agricultural engineer, Soil Conservation Service. Washington, D.C. . Revised October 1973

You can obtain more information about farming and constructing terraces from the Soil Conservation Service. It also can provide technical assistance in building terraces or applying other conservation practices to the land you farm.

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